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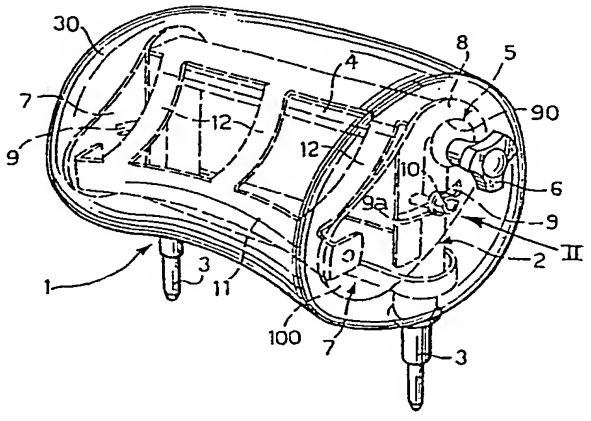
(54) A headrest element for seats, particularly motor-vehicle seats.

(57) The position of the headrest element (1) relative to the backrest is adjustable selectively with an orbital movement so as to enable it to be adapted more precisely to the anthropometric characteristics and preferences of the seat occupant.

FIG. 1



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Description

A headrest element for seats, particularly motor-vehicle seats

The present invention relates to headrest elements in general or, in short, to seat headrests and has been developed with particular attention to its possible application to motor-vehicle seats.

In accordance with a conventional concept, considered in the greater proportion of current motor-vehicle production, headrests are provided at the top of the seat backrests principally to avoid the phenomenon known as "whiplash" which arises, for example, as a result of a sharp deceleration due to a collision or to a vehicle being hit by a following vehicle, when the head of the occupant of the motor vehicle seat is projected violently backwards, with an obvious risk of injury.

Industrial utility model application no. 53501-B/85, in the name of the same Applicant, describes a headrest whose front face has a generally-concave shape, complementary to the shape of the occipital region of the head of a seat occupant. Support means are provided for keeping the headrest in a position in which it supports the head of the seat occupant with its front face in contact with the occipital region of the person's head.

Thus, according to this latter solution, the headrest is intended to be used continuously, offering greater comfort to the person occupying the seat.

The object of the present invention is to provide a headrest element which is improved as regards enabling the headrest to be adapted as precisely as possible to the anthropometric characteristics and driving or travelling preferences of the seat occupant.

In this respect, it should be noted that, as well as the requirement for the position of the headrest to be adaptable precisely for people of different statures who may occupy the seat, there is also a need to offer different people, having approximately the same anthropometric characteristics, different attitudes of support according to their personal habits or tastes.

This is particularly true of seats for passengers who are not involved directly in the driving of the vehicle and who therefore have a wider choice of possible travelling positions than the driver.

According to the present invention, this object is achieved by virtue of a headrest element, or in short, a seat headrest, comprising a support structure and a shaped body defining a surface for supporting the head of the seat occupant, characterised in that the shaped body is mounted on the structure with the interposition of:

- eccentric means which can impart a generally-orbital movement to the shaped body about an axis which is generally horizontal in use and
- cam means which, as a result of the orbital movement, can impart a pivotal movement to the shaped body about a further axis which is horizontal in use, the superposition of the orbital movement and the pivotal movement causing a variation in the overall attitude of the headrest relative to the seat.

The invention will now be described, purely by way of non-limiting example, with reference to the appended drawings, in which:

Figure 1 is a partially-transparent perspective view of a headrest produced according to the invention, and

Figure 2 is a partially-cut-away side elevation taken on the arrow II of Figure 1.

A headrest element or, in short, a headrest for mounting on the top of the backrest of a motor-vehicle seat (not illustrated as a whole) is generally indicated 1.

According to a widely known solution, the headrest 1 includes a rigid support structure 2 (usually made of metal or with a metal frame) including two vertical rods 3. The latter are intended to be inserted slidingly - with selective adjustability of the position of insertion - into tubular seats (not illustrated) which extend approximately vertically within the structure of the backrest.

A shaped body 30 is fitted into the structure 2 and is constituted by a frame (better described below) covered by a mass of padding (upholstery). This mass is intended to improve the comfort of the seat occupant whose head, as stated in the introduction to the present description, is intended to rest substantially continuously on the shaped body 30 of the headrest 1 during normal travel of the motor vehicle.

A shaft 4 is mounted at the top of the support structure 2 and is rotatable about a horizontal axis X_4. The shaft 4, which extends so as to connect the upper ends of the shafts 3 has keyed to it two eccentrics 5 in correspondence with the two outer opposite sides of the headrest 1. Only one of the eccentrics 5, specifically the one situated on the left hand side of the headrest, is visible in the drawings.

The shaft 4 can be rotated about its axis X_4 by means of a hand-grip 6 provided on one side of the headrest.

Two plates, indicated 7, are fitted on to the eccentrics 5 and act as the sides of the shaped body 30.

In the embodiment illustrated, the two plates or sides 7 have a shape which could be defined as a kidney-shaped, that is, slightly arcuate with their concavities facing towards the front face of the headrest 1, that is the face which supports the head of the seat occupant.

The plates 7 are mounted generally obliquely relative to the extent (approximately vertical) of the structure 2 with their upper ends 8, which are provided with apertures 90, fitted around respective eccentrics 5 and situated in positions generally further back than the lower ends 100.

Each of the plates 7 (mounted on the structure 2 in substantially homologous positions) has a central slot 9 slidably engaged by a respective pin 10 which projects generally horizontally from the structure 2 of the headrest.

Thus, like the body 30 as a whole, the slots 9, shown here as being approximately straight, also

have a first end 9a which is situated generally forward of and lower than the other end 9b. This means that the slots 9, which act as guide surfaces for the movement of the cam mechanism 9, 10 can be seen to have an upper end (9b) situated in a portion generally further back than the lower end (9a).

The lower ends 100 of the two plates or sides 7 are interconnected in a generally bridge-like arrangement by a generally arcuate horizontal restraining strap 11 with its concavity facing the front face of the headrest. Connected in a generally reticular structure to the strap 11, which is of flexible material, are a plurality of additional vertical reinforcing elements 12 (three in the embodiment illustrated) which are also made in the form of flexible bands and complete the framework in the front part of the shaped body 30. This framework has a generally curved bowl-like shape which improves the restraint of the head of whoever is occupying the seat.

More particularly, each of the reinforcing elements 12 extends between the strap 11 and the upper part of the structure 2 which extends in a generally portal-like configuration to connect the upper ends of the shafts 3.

The rotation of the shaft 4, driven by means of the hand-grip 6, causes the eccentrics 5 to rotate about the axis X_4. The eccentrics 5, being engaged in the apertures 90 then impart a circular movement, comparable essentially to an orbital movement about the axis X_4 of the shaft 4, to the upper ends 8 of the sides or plates 7.

In general, if the eccentrics 5 start in their highest positions relative to the axis X_4 and the hand-grip 6 is rotated clockwise (with reference to the orientation in Figure 2), this movement will bring the plates 7 from their initial positions, in which their upper ends 8 (which are vertically aligned with the shafts 3) are highest, to positions which are progressively further back and lower until (when the eccentrics 5 are in their lowermost positions relative to the axis X_4) they reach their lowest positions in which the ends 8 are again aligned with the shafts 3, and then return through successively higher positions in which the ends 8 are progressively further forward and higher, to their initial highest positions.

As a result of the engagement of the pins 10 (fixed relative to the structure 2) within the slots 9 provided in the plates 7, the above orbital movement of the upper ends 8 of the plates 7 is accompanied by a pivoting movement of the plates 7 (and of the shaped body 30 as a whole) about the horizontal axis defined by the pins 10 which are fixed to the structure 2.

Starting from the position in which the upper ends 8 are highest they will then move gradually (as a result of the clockwise rotation of the hand-grip 6) to their lowest positions while the sides 7 and the body 30 as a whole assume an orientation which is gradually more inclined to the horizontal. As the upper ends 8 then return to their highest positions (still by clockwise rotation of the hand-grip 6), the plates 7 and the body 3 gradually pivot towards their orientation which is nearest to the vertical.

By rotating the hand-grip 6, the person occupying the seat can thus vary not only the height of the headrest 1 relative to the backrest but also its inclination until the position considered most pleasing is reached.

Moreover, since the reinforcing elements 12 are connected at one end to the structure 2, which remains fixed, and at their opposite ends to the strap 11 which interconnects the plates 7 and therefore moves with them, the combined rotary-pivoting movement (orientation) of the body 30 described above is accompanied by a variation in the curvature (concavity) of the reticular reinforcing structure 11, 12 and thus of the surface which supports the head of the seat occupant. In general, the maximum and minimum values of the concavity will occur approximately when the plates 7 are in their highest and lowest positions relative to the structure 2.

Naturally the amplitude and the path of the composite movement described above, as well as the variation in the concavity of the front face of the body 30, depend on the shape of the slots 9 as well as on the diameter and eccentricity of the eccentrics 5 relative to the axis X_4.

This means that the slot 9 could be given a different profile from that - approximately straight -illustrated in the appended drawings, according to specific applicational requirements.

Claims

1. A seat headrest comprising a support structure (2) and a shaped body (30) defining a surface for supporting the head of the seat occupant, characterised in that the shaped body is mounted on the structure (2) with the interposition of:
- eccentric means (5,90) which can impart a generally orbital movement to the shaped body (30) about an axis (X_4) which is generally horizontal in use and - cam means (9,10) which, as a result of the orbital movement, can impart a pivotal movement to the shaped body (30) about a further axis (10) which is horizontal in use, the superposition of the orbital movement and the pivotal movement causing a variation in the overall attitude of the headrest (1) relative to the seat.

2. A headrest according to Claim 1, characterised in that the cam means comprise at least one slot (9) and a pin (10) which cooperates slidingly with the slot (9), provided respectively in one (7) and on the other (2) of the support structure (2) and the shaped body (30).

3. A headrest according to Claim 2, characterised in that the at least one slot is provided in the shaped body (7) whilst the at least one pin (10) is provided on the support structure (2).

4. A headrest according to any one of the preceding claims, characterised in that the eccentric means (5, 90) act adjacent the upper end (8) of the shaped body (30) whilst the cam means (9, 10) act in correspondence with the intermediate region of the shaped body (30).

5. A headrest according to any one of the

preceding claims, characterised in that the shaped body (30) includes at least one plate-like body (7) having a first aperture (90) which cooperates with the eccentric means (5) and a second aperture (9) defining the cam means (9, 10).

6. A headrest according to any one of the preceding Claims 1 to 5, characterised in that the shaped body is generally inclined to the support structure (2) with the upper end (8) of the shaped body (30) situated in a position generally further back than the lower end (100) of the shaped body (30) and in that the cam means (9,10) have respective guide surfaces (9) also generally inclined to the support structure (2) with their upper ends (9b) in positions generally further back than their lower ends (9a).

7. A headrest according to any one of the preceding claims, characterised in that the shaped body (30) includes a restraining frame (11,12) with a generally curved configuration on its side which is intended to face towards the head of the person occupying the seat.

8. A headrest according to Claim 7, characterised in that the restraining frame (12) is connected to the support structure (2) so that the orbital and pivotal movements of the shaped body (30) also cause variations in the curvature of the restraining frame (11, 12).

9. A headrest according to Claim 7 or Claim 8, characterised in that the shaped body (30) includes two plate-like bodies (7) associated with the sides of the shaped body (30) and cooperating with the means (5, 9) with the eccentric (5) and the cam means (9, 10) and in that the restraining frame extends as a generally bridge-like structure between the two plate-like bodies (7).

10. A headrest according to Claim 9 characterised in that the restraining frame includes:
- a flexible strap (11) connecting the two plate-like bodies (7), and - a plurality of restraining elements (12) extending between the strap (11) and the support structure (2).

11. A headrest according to any one of the preceding claims characterised in that it is provided with an operating handgrip (6) for selectively rotating the eccentric means (5, 9).

FIG. 1

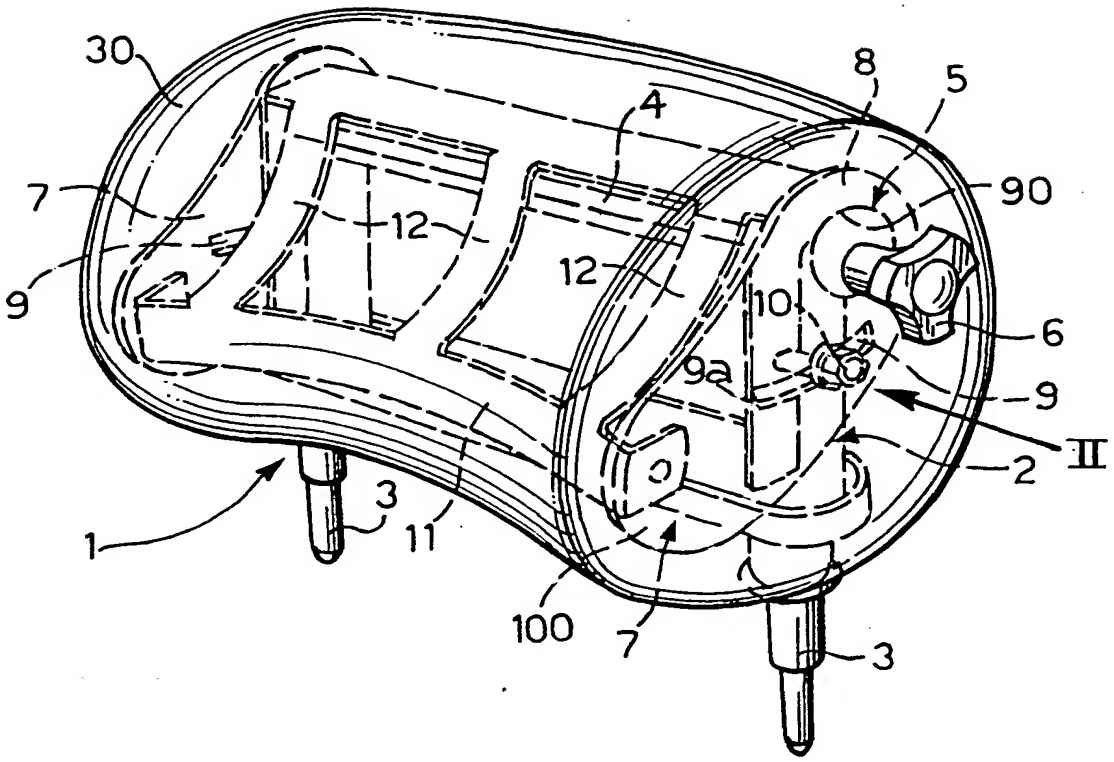
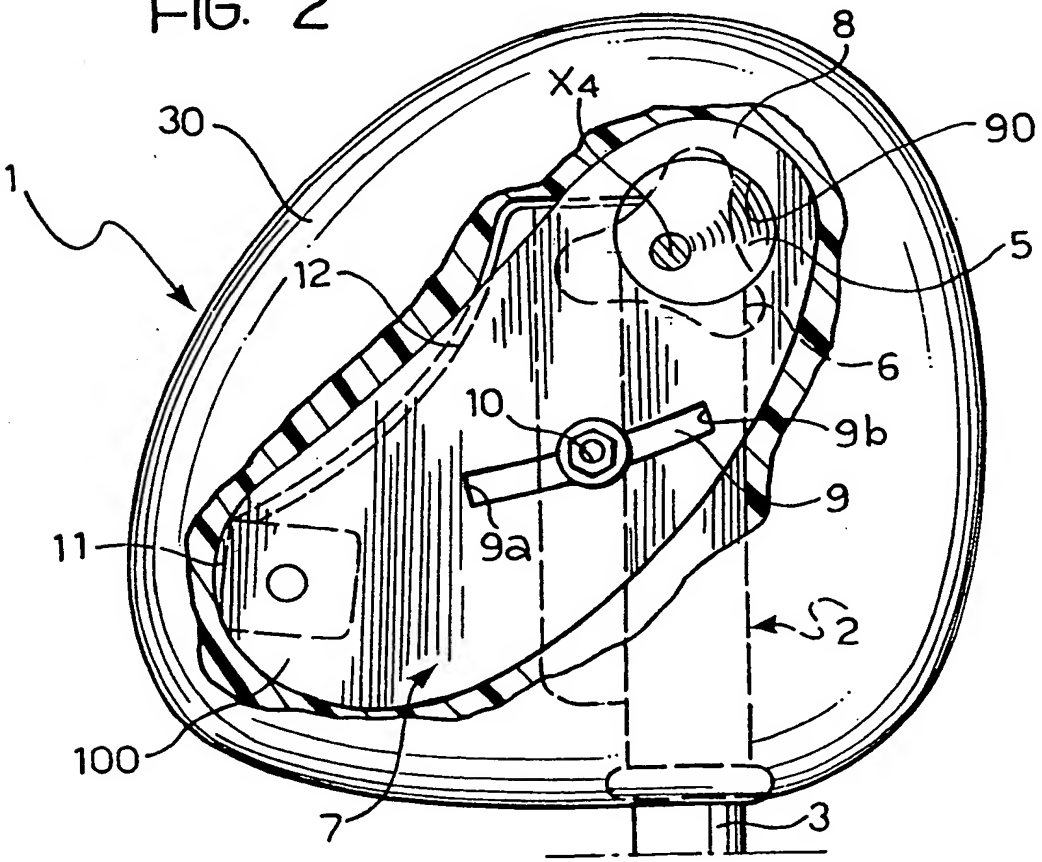


FIG. 2



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EUROPEAN SEARCH REPORT

Application Number

EP 89 83 0272

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	DE-A-3 029 150 (AISIN) * Page 4, line 16 - page 7, line 16; figures *	1,2,5	B 60 N 1/06
A	FR-A-1 588 910 (KEIPER) * Page 6, line 36 - page 9, line 4; figures *	1	
A	US-A-3 403 938 (CRAMER) * Column 1, line 63 - column 3, line 9; figures *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A 47 C
B 60 N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12-09-1989	HORVATH R.C.

CATEGORY OF CITED DOCUMENTS

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